CLAIMS

1. A rotor (4) for a permanent-magnet electrical machine, comprising an axle (6) mounted to the machine body with bearings, a rotor pack made of iron and arranged around the axle (6), as well as permanent magnets (10) adapted to the rotor pack, used for forming the magnetic poles (9) of the rotor so that the magnetic flux density is at its maximum at the centre of the pole and decreases towards the edges of the pole, **characterised** in that there are slots (24,26,32) in the rotor poles (9) on the route of the magnetic flux so that at least one slot (24,26,32) extends from both edges of the pole (9) essentially towards its centre and that the slot (24,26,32) is closer to the outer circumference (3) of the rotor than the central axle of the rotor.

2. A rotor according to claim 1, **characterised** in that the slots (24,26,32) are located at a distance from the outer circumference (3) of the rotor.

3. A rotor according to claim 1 or 2, **characterised** in that the permanent magnets (10) are arranged in a V shape so that the magnets (10) extend to the vicinity of the outer circumference (3) of the rotor and that the magnets (10) forming a single pole (9) are closer to each other at the end towards the axle (6) than at the end towards the outer circumference (3).

4. A rotor according to any of the claims 1 to 3, **characterised** in that the slot (24) extends from the edge of the pole (9) towards the centre of the pole (9) essentially parallel with the outer circumference (3) of the rotor.

5. A rotor according to any of the claims 1 to 4, **characterised** in that the width of the slot (24) decreases towards the centre of the pole (9).

6. A rotor according to any of the claims 1 to 5, **characterised** in that the end of the slot (26) located towards the centre of the pole is curved towards the axle.

7. A rotor according to any of the claims 1 to 3, **characterised** in that the slot (24,26,51) extends from the edge of the pole essentially towards the centre of the pole on the outer circumference of the rotor.

8. A rotor according to any of the claims 1 to 7, **characterised** in that there are several slots (32,51,52,53) extending from both edges of the pole towards the centre of the pole, so that the slots on the same edge of the pole are located at an interval from each other in the radial direction of the rotor and that at least one slot (32,51) on both edges of the pole is essentially parallel with the outer circumference of the rotor.

9. An arrangement according to any of the claims 1 to 8, **characterised** in that the slots (32,51) closer to the outer circumference (3) of the rotor are wider and/or longer than the slots farther away from the outer circumference (3) of the rotor.

10. A rotor according to claim 1, **characterised** in that the permanent magnets (62) are located on the surface of the outer circumference (3) of the rotor and that the slots (63) are arranged inside the rotor at the positions of the permanent magnets (62) in terms of the radial direction of the rotor.

11. A method for manufacturing a permanent-magnet electrical machine so that the air gap flux has a sinusoidal form, said electrical machine comprising an axle (6) mounted to the machine body with bearings, with said method comprising the arrangement of rotor poles (9) around the axle (6), said poles made of magnetically conductive iron (13) and permanent magnets (10) adapted to it, **characterised** in that there are axial slots (24,26,32) in the rotor, essentially extending from the edge of the pole towards its centre.

12. A method according to claim 11, **characterised** in that the slots (24,26,32) are made by die-cutting.

13. A method according to claim 11, **characterised** in that the slots (24,26,32) are made using a laser.

14. A method according to claim 11, **characterised** in that the slots (63) are made by drilling axial holes in the rotor.